



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/617,812

07/14/2003

Yoji Mizutani

KKH-0028

4175

23353 7590 01/22/2007
RADER FISHMAN & GRAUER PLLC
LION BUILDING
1233 20TH STREET N.W., SUITE 501
WASHINGTON, DC 20036

EXAMINER

MOORE, KARLA A

ART UNIT

PAPER NUMBER

1763

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

01/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/617,812

Applicant(s)

MIZUTANI ET AL.

Examiner

Karla Moore

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21,23,24 and 27-32 is/are pending in the application.
- 4a) Of the above claim(s) 1-18,30 and 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-21,23,24,27-29 and 31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Newly submitted claim 32 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claim 32 represents a species distinct from any originally examined. A first species comprising a curing processing unit including an antenna for generating plasma by a high frequency from a high frequency power source, and Ar gas being introduced into said curing processing unit is represented by claim 32. This is a species different from a second species (previously examined) comprising a grid electrode and electron tubes for generating plasma. See specification from page 41, row 19 through page 43, row 6 and Figures 15 (second species) and 16 (first species).
2. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 32 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 19, 23 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated U.S. Patent Publication No. 2004/0020601 to Zhao et al.

Art Unit: 1763

5. Zhao et al. disclose a substrate processing apparatus in Figure 3C, comprising: a first processing section (1101) having a coating unit (1111) capable of coating a being used for coating a substrate with a coating solution which becomes an insulating film; a second processing section (1103 and 1105) having a curing processing unit (1121) capable of curing the insulating film on the substrate individually; a carrier mechanism (1119) for carrying the substrate between the first processing section and the second processing section; a carrier chamber housing (1117) said carrier mechanism and being hermetically closable; and a pressure reducing mechanism (paragraph 88) for reducing the pressure in said carrier chamber to a reduced pressure, wherein said curing processing unit is structured so that the pressure in said curing unit is allowed to be reduced (paragraph 88). As the curing chamber is a part of the second processing section, it follows that the pressure of the second processing section is also allowed to be reduced. With respect to the specific pressures to be achieved and maintained during a processing method, the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

6. With respect to claim 23, said first processing section includes a heating/annealing processing unit (paragraph 76).

7. With respect to claim 28, a thermal processing unit (any of the other cure units or units 1125) for subjecting the substrate to thermal processing is provided in said second processing unit.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1763

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 19-20, 23 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,470,798 to Ouellet in view of U.S. Patent No. 6,132,814 to Livesay et al.

11. Ouellet discloses the invention substantially as claimed and comprising: a first processing section (left part of apparatus) having a coating unit (Figure 1; 5) capable of coating a being used for coating a substrate with a coating solution which becomes an insulating film; a second processing section (right side of apparatus) having a curing processing unit (one of right-most units labeled 6; it appears the left most "6", should have been labeled "8"; column 7, row 27) capable of curing the insulating film on the substrate by individually irradiating the substrate with electron beams; and a carrier mechanism (2) for carrying the substrate between the first processing section and the second processing section; a carrier chamber housing (13) said carrier mechanism and being hermetically closable (the entire apparatus is hermetic, column 7, rows 38-40 and column 8, row 13-15); and a pressure reducing mechanism (although not explicitly disclosed, a pressure reducing mechanism would need to be provided in order to operate at vacuum as disclosed) for reducing the pressure in said carrier chamber to a reduced pressure, wherein said curing processing unit and second processing section are both is structured so that the pressure therein is allowed to be reduced (column 7, rows 38-40 and column 8, row 13-15). With respect to the specific pressures to be achieved and maintained during a processing method, the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

12. However, while Ouellet teaches that different types of curing units can be used (column 8, rows 6-9), an electron beam curing apparatus is not specifically taught.

13. Livesay et al. teach using an electron beam curing apparatus for curing a spin on glass film for the purpose of forming a dense, etch-resistant film (column 4, row 45 through column 5, row 17).

14. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an electron beam curing apparatus in Ouellet in order to form a dense, etch resistant film as taught by Livesay et al.

15. With respect to claim 20, the electron beam curing apparatus of Livesay et al. further includes a grid electrode (Figure 1, 26) between a mounting table on which the substrate is mounted and a device for irradiating with the electron beams.

16. With respect to claim 23, the first processing section includes a heating processing unit (left-most heating unit) for subjecting the substrate coated with the coating solution to heating processing.

17. With respect to claim 27, Ouellet further discloses a reduced pressure chamber housing said carrier mechanism and said second processing section and being hermetically closable; and a pressure reducing mechanism for reducing the pressure in said pressure chamber to a predetermined pressure (column 7, rows 38-44 and column 8, rows 13-15).

18. With respect to claim 28, a thermal processing unit (other of right most units labeled 6) for subjecting the substrate to thermal processing is provided in said second processing unit.

19. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ouellet and Livesay et al. as applied to claims 19-20, 23 and 27-28 above, and further in view of U.S. Patent No. 5,489,339 to Hattori et al.

20. Ouellet and Livesay et al. disclose the invention substantially as claimed and as described above.

21. However, Ouellet and Livesay et al. fail to disclose the substrate mounting mechanism capable of receiving a reverse bias voltage.

Art Unit: 1763

22. Hattori et al. teach the use of a processing apparatus comprising a substrate mounting mechanism capable of receiving a reverse bias voltage for the purpose of controlling processing (column 5, rows 6-12).

23. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a substrate mounting mechanism capable of receiving a reverse bias voltage in Ouellet and Livesay et al. in order to control processing as taught by Hattori et al.

24. Claim 24 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouellet and Livesay et al. as applied to claims 19-20, 23 and 27-28 above, and further in view of U.S. Patent Publication No. 2003/0154001 A1 to Oh.

25. Ouellet and Livesay et al. disclose the invention substantially as claimed and as described above.

26. However, Ouellet and Livesay et al. fail to disclose the first processing section further including a resist coating unit, a developing unit and an exposure processing unit. Nor do Ouellet and Livesay et al. disclose an etching unit.

27. Oh teach incorporating processing units such as resist coating units, developing units and etching units into a cluster tool for the purpose of realizing certain organizational and wafer handling benefits and efficiencies (paragraphs 13, 16 and 38-39).

28. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a resist coating unit, a developing unit and an exposure processing unit in Ouellet and Livesay et al. in order to realize certain organizational and wafer handling benefits and efficiencies as taught by Oh.

29. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ouellet and Livesay et al. as applied to claims 19-20, 23 and 27-28 above, and further in view of U.S. Patent No. 6,657,212 to Komori et al.

30. Ouellet and Livesay et al. teach provision of a curing unit and an e-beam curing unit, respectively.

Art Unit: 1763

31. However, neither teaches providing an electron beam curing apparatus comprising an electron beam tube for generating plasma.

32. Komori et al. teach that an e-beam curing apparatus comprising an e-beam tube can be provided for the purpose of performing a convention e-beam process on a semiconductor substrate (column 1, rows 18-29).

33. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an electron beam curing apparatus in Ouellet and Livesay et al. in order to perform a conventional e-beam curing process on a semiconductor substrate as taught in Komori et al.

Response to Arguments

34. Applicant's arguments filed 2 November 2006 have been fully considered but they are not persuasive. As described above, the pressure relationship among parts of an apparatus during an intended method (as presently recited) are not structural limitations. Therefore, the previously applied art continues to be applied as each of the claimed structural limitations are present in the disclosures of these references.

Conclusion

35. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

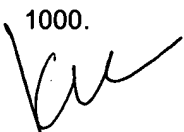
Art Unit: 1763

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-

1000.



Karla Moore
Primary Examiner
Art Unit 1763
17 January 2007